Posttonsillectomy Weight Loss in Adults

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Abstract

Objective. To analyze and determine the incidence and severity of weight loss in adult tonsillectomies.

Study Design. Case series with chart review.

Setting. Adult tonsillectomy is performed for a variety of indications. Anecdotally, patients report a 10- to 15-pound weight loss in the postoperative period; however, no supporting research has been documented. The pediatric population has a well-documented weight gain postoperatively.

Subjects. In total, 138 adults (aged 18-40 years) receiving tonsillectomy at Naval Medical Center Portsmouth (NMCP) between 2008 and 2013.

Methods. A retrospective study was performed using an S3 surgery scheduling system search of all adult tonsillectomies at NMCP between 2008 and 2013. A subsequent electronic medical record search (AHLTA) of preoperative and postoperative weights and demographics was performed.

Results. Data analysis revealed a significant difference found between preoperative and postoperative weight across all age groups (4.77 pounds, P < .005). Analysis of variance was performed to determine if there is a significant difference between these age and body mass index (BMI) groups. The highest amount of weight loss was observed in the oldest population group (5.72 pounds in subjects aged >40 years, 4.95 pounds in 31- to 40-year-olds, and 5.44 pounds in 20- to 30-year-olds, P = .03). Age comparisons were statistically significant. There was no statistically significant association between BMI and postoperative weight loss.

Conclusions. These results indicate that there is evidence of a roughly 5-pound weight loss in the postoperative period following tonsillectomy in adults with subsequent return to baseline weight after roughly 5 months. These findings are significant since this could lead to further research into changes in obesity-associated disease.

Keywords

postoperative tonsillectomy, weight loss, postoperative weight loss, postoperative changes, postoperative counseling, tonsillectomy

Received December 23, 2014; revised February 18, 2015; accepted February 27, 2015.

Adult tonsillectomy is performed for a variety of reasons to include chronic tonsillitis, keratosis pharyngeal, tonsillar asymmetry, and obstructive sleep apnea. Tonsillectomy is very often poorly tolerated by our adult population compared with pediatric patients, frequently leading to weight loss in the immediate postoperative period from decreased oral intake caused by the resulting sore throat. Anecdotally, patients often admit to a 10- to 15-pound unintentional weight loss when seen in follow-up. To date, no studies have been performed to quantify the weight changes following adult tonsillectomy.

Various studies have linked weight gain in the posttonsillectomy period for pediatric patients. Conlon et al found that children receiving tonsillectomies were more likely to have pre- and postoperative weights exceeding the national average. Interestingly, patients had a 12% weight gain above the expected amount for the study population compared with age/gender-matched individuals in the postoperative period (7-29 months, 18-month average). Bonuck et al later confirmed this finding in a meta-analysis where all 8 studies meeting the inclusion criteria found evidence of increased weight gain over the observed study period (typically 6-24 months). The meta-analysis led to further research on physiologic and biochemical causes contributing to these findings: increased postoperative serum concentrations of insulin-like growth factor 1 (IGF-1) and IGF-binding protein 3 (IGFBP-3) in patients with previously diagnosed growth failure and

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sleep-disordered breathing correlated with an increased rate of weight gain during the postoperative period. More recent studies have further analyzed the link between obesity and tonsillectomies in pediatric patients. While many studies link postoperative weight changes in the pediatric population, there is no evidence to support weight changes in adults, and it is important that we analyze weight variations in a routine procedure for otolaryngologists.

**Methods**

In our study, approved by the Naval Medical Center Portsmouth Institutional Review Board, we aimed to retrospectively identify and quantify weight changes following adult tonsillectomy in the immediate and delayed postoperative period. Our electronic surgical scheduling system (S3) was searched to identify a consecutive group of adult patients between ages 18 and 65 years who underwent tonsillectomy at our facility between 2008 and 2013. Our universal electronic health record (AHLTA) was then reviewed for these patients’ demographics to include age, sex, active medical conditions including but not limited to diabetes and hypothyroidism, tobacco use, preoperative weight at the time of the preoperative visit (typically within 30 days of surgery), monthly postoperative weights for any clinical visit for the year following surgery, and timing of postoperative weight measurements. Excluded from the study were any patients who received any adjunctive procedures in addition to tonsillectomy, including uvulopalatopharyngoplasty, septoplasty, and adenoidectomy. Patients undergoing any other surgery in the year following their tonsillectomy were further excluded. Finally, patients with medical conditions associated with significant weight loss or gain such as cancer, pregnancy, or bariatric/weight loss surgery were excluded. This included any patients receiving tonsillectomy as part of treatment for oropharyngeal cancer or who were alternatively diagnosed with any type of cancer within the year following the procedure. Analysis was performed comparing the average weight loss for the population as well as separating patients by age, sex, and body mass index (BMI) to observe differences. Age groupings were arbitrarily set as follows: 18- to 20-year-olds, 21- to 30-year-olds, 31- to 40-year-olds, and >40-year-olds. The BMI groupings were designated based on traditional measurements of normal weight (18-24.9), overweight (25-29.9), and obese (>30). BMI was calculated during data entry based on the measured height and weight of the patient taken at each of the appointments pre- and postoperatively.

**Results**

Electronic records of 326 tonsillectomies performed at our facility from 2008 to 2012 were reviewed. Of these, 138 patients met inclusion criteria. There were 70 women and 68 men ranging in age from 18 to 65 years (mean, 28 years). Of the age group stratification: 18 patients were 18 to 20 years old, 82 patients were in the 21- to 30-year-old group, 26 patients were in the 31- to 40-year-old group, and 12 patients were >40 years old. Two outliers lost significant weight in the immediate postoperative period (19 pounds/8.5 kg), but both of these patients returned to baseline weight within the year following surgery. Only 1 patient sustained significant and consistent weight loss over the following year postoperatively (30 pounds/13.5 kg). Applying a Student t test comparing the mean preoperative weight for the included population with the mean postoperative weight revealed an average weight loss from preoperative measurement of 4.77 pounds/2.14 kg ($P < .005$). This weight loss was measured between 12 and 40 days postoperatively. The $\chi^2$ /Fisher exact tests showed no significant difference between weight loss and gain by patient sex. Patients were then separated into age groups and BMI for comparison. Analysis of variance (ANOVA) for significant differences between the age groups revealed that the largest amount of weight loss was in the oldest population group. Patients older than 40 years lost the most weight (5.72 pounds/2.56 kg) compared with 31- to 40-year-olds (4.95 pounds/2.2 kg) and 20- to 30-year-olds (5.44 pounds/2.42 kg) ($P = .03$) (Figure 1). The youngest group (18-20 years old) had a small weight loss (1.01 pounds/0.45 kg), but this may have been due to small sample size ($n = 18$).

When trending the monthly weight changes through the first postoperative year, patients gained weight back to baseline (preoperative weight) by 7 months and returned within 1.5 pounds/0.67 kg from baseline weight at 4 months postoperatively (Figure 2). Furthermore, patients not only regained the weight lost postoperatively but ultimately showed a net weight gain overall of about 2 pounds/0.9 kg over the year following surgery. Trending the weight changes by age groups (Figure 3) reveals the middle age groups generally matched the trend of the overall weight changes for the entire population studied.

**Discussion**

Anecdotally, adult patients are expected to lose weight in the immediate postoperative period following tonsillectomy for a multitude of reasons, but foremost are from the resultant odynophagia and dysphagia. Prior to this study, it was uncertain how much weight loss could be expected and for
how long. Our study was able to determine that adults can expect to lose approximately 5 pounds/2.22 kg over the first 2 to 4 weeks following tonsillectomy and will regain this weight by 6 to 12 months postoperatively.

These findings are important for a variety of reasons. Most important, it provides otolaryngologists statistical evidence to support counseling regarding preoperative expectations. Based on our findings, it can be expected that patients will lose roughly 5 pounds/2.22 kg postoperatively. In addition, this weight will likely return over the next 6 to 12 months. It is therefore important to inform patients that this procedure should not be used for weight loss incentives. This counseling is particularly important for patients with weight-related comorbidities, such as obstructive sleep apnea. These patients should be thoroughly counseled regarding dietary and lifestyle modifications that will be necessary to maintain postoperative weight loss that may benefit their overall health.

Important from a postoperative recovery standpoint is that a 5-pound (2.22 kg) weight loss is generally well tolerated in the average adult patient. Rarely will an instance occur when such an amount of weight loss would be worrisome. Furthermore, since the weight will likely reaccumulate over the next 6 to 12 months, there is unlikely to be any long-term sequelae to the initial postoperative weight loss.

Interestingly, postoperative weight change in the pediatric patient is nearly inverse to that of the adult population. Based on the pediatric studies by Conlon et al\(^1\) and Bonuck et al\(^2\), it appears that over a relatively similar postoperative timeframe, children not only gain weight but do so at a faster rate than age/sex-matched individuals. Similar to the studies by Bonuck et al, it would be interesting to analyze biochemical changes, if any, in the adult population.

Our study is limited in that it is a retrospective review of the electronic medical record, and although weight reporting across our institution is standardized, methods may vary. There can be seasonal variations in the weights of patients’ attire and footwear, as well as the possibility of entry of self-reported weights. We feel our sample size adequately accounts from these variations. A prospective follow-on study including diet logs and attire-adjusted weights would provide even more accurate data for future direction.

**Conclusion**

Adult tonsillectomies are procedures routinely performed by otolaryngologists nationwide. Until this point, no data existed to confirm postoperative weight changes that were previously suspected. This study quantifies that patients can be expected to lose roughly 5 pounds within the 2- to 4-week postoperative period. In addition, patients will likely return to their baseline weight within the 6 months following their procedure. This study provides otolaryngologists with evidence on weight fluctuations with which to appropriately counsel patients.

**Acknowledgment**

Research data derived from an approved Naval Medical Center, Portsmouth, Virginia, institutional review board protocol.

**Author Contributions**

Stefan Rozycki, data collection, data analysis, drafting IRB proposal and overall write-up; Eric M. Gessler, data analysis, reviewing/editing IRB proposal and IRB write-up, final approval of publishing version.

**Disclosures**

Competing interests: None.
Sponsorships: None.
Funding source: None.

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